STANDARDS OF FOREST MANAGEMENT

A GUIDEBOOK

Québec

91-06914/

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Revised Edition
Québec City, March 1990

Gouvernement du Québec
Ministère de l'Énergie et des Ressources

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Dépôt légal - 1er trimestre 1990
Bibliothèque nationale du Québec
ISBN 2-550-20661-4
Publication no ER90-3009

The forest has traditionally been a source of wealth and well-being for all Québecers.

The most visible of our forest activities is undoubtedly the harvesting of wood for paper and lumber production. Yet the forest plays an equally important role in outdoor recreation. Hunters, anglers, trappers and all outdoorsmen feel that the forest offers a truly unique environment which they are anxious to preserve.

The forest is essential to our quality of life. It purifies our air, filters our water and stabilizes our soils, preventing both erosion and flooding.

Until recently, it was believed that our forest resources were inexhaustible. Blinded by this illusion of abundance, we overexploited our woodlands, totally heedless of the need to maintain the forest or even replace felled timber.

Surveys conducted between 1970 and 1985 dispelled this illusion and revealed some dire facts: Québec's forests have been reduced to such a lamentable state that wood shortages are expected in the short term in several regions of the province.

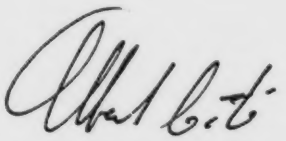
Aware of my responsibilities and anxious to correct this situation, I have implemented a new forest system, supported by the new **Forest Act**.
This legislation, based on the principles of sustained yield and mutual respect among all forest users, confers major responsibilities on holders of timber supply and forest management agreements. The new **Forest Act** has been

in effect for only two years, but the practices mandated by the Act have already produced appreciable results.

The guidebook **Toward New Harmony in the Forest - Standards of Forest Management**, most of which was included in the **Regulation respecting standards of forest management** adopted ty the Conseil des ministres on October 26, 1988, is proving to be a key component of the new forest regime.

This publication is the fruit of unprecedented cooperation and several years of discussion among officials of the ministère de l'Énergie et des Ressources, the ministère de l'Environnement and the ministère du Loisir, de la Chasse et de la Pêche. Thanks to the close collaboration between officials in these departments and holders of timber supply and forest management agreements in implementing the forest management standards, all Québecers will benefit fully from their forest resources.

I would like to thank my colleagues, the ministers of the Environment and of Recreation, Fish and Game, for their help in preparing this guidebook. To conclude, I would like to pay a special tribute to the Associate Deputy Minister for Forests, Gilbert Paillé, and to the officials of all three departments, who pooled their energies and expertise to produce this guidebook.



Albert Côté, forest engineer

Minister for Forests

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FOREWORD

The publication of this guidebook comes as one more stage in the process of public land use planning in Québec. Public land use planning is defined as a method of assigning a socioeconomic function to territorial units based on our understanding of the current use and production potential of public lands. Land use planning is a crucial element in the new forest regime, since it makes possible the preparation of a master plan for the use of forests in the public domain. Moreover, under the **Act respecting land use planning and development**, land use planning is one of the components of the development plan prepared by each regional county municipality.

The process of public land use planning results in two distinct but interrelated elements: the public land use map, which situates and delimits zones and sites, and the management standards authorized for each zone or site identified in the forest.

Three categories of public lands are identified on the land use map drawn up by the ministère de l'Énergie et des Ressources in collaboration with the other departments concerned. The lands in each of these categories are assigned a specific function, which determines whether they will be used for single or multiple purposes. These lands are further differentiated by the type and intensity of forest production activities authorized therein (see table: **Delimitation and intended use of territorial units under the public land use plan**).

The public land use map, which follows the boundaries of the regional county municipalities, constitutes the Government's proposal for the public land use. It is sent to the regional county municipality concerned to be integrated into its development plan, which is binding on all parties, both private and governmental, operating on public and private lands.

The function of each territorial unit in the public domain is related to its uses and its potential and must be flexible so that it can be adapted or modified to suit changing socioeconomic needs. Such a modification process is provided for in the **Act respecting the lands in the public domain.**

The public land use plan also includes forest management standards, which are the subject of this guidebook.

By publishing all the recognized silvicultural practices and required protective measures in a single document and by making their application regulatory under the **Forest Act**, the ministère de l'Énergie et des Ressources is pursuing two objectives: firstly, to maintain the function and quality of public lands and, secondly, to ensure optimum production in Québec's public forests.

The forest management standards were defined by the ministère de l'Énergie et des Ressources during the process of developing a new forest policy. At the request of the Government, the standards were finalized by committees composed of officials representing the three departments responsible for resource management on public lands: the ministère de l'Énergie et des Res-

sources, which administers public lands and forest resources, the ministère du Loisir, de la Chasse et de la Pêche, which has jurisdiction over wildlife and outdoor recreation, and the ministère de l'Environnement, which is responsible for water quality.

The contents of this guidebook will be subject to improvenement as we learn more about the various components of the forest environment and the necessary management standards. No doubt there will be specific cases where one or more of the procedures described herein will need to be adjusted to ensure that the proposed objectives are more fully attained. If such a situation arises, the officials of the relevant departments should submit the case to the regional interdepartmental committees responsible for supervising the implementation of the management standards and for evaluating the results. These committees were formed under an agreement between the ministère de l'Énergie et des Ressources, the ministère de l'Environnement and the ministère du Loisir, de la Chasse et de la Pêche.

DEFINITION AND INTENDED USE OF TERRITORIAL UNITS ACCORDING TO THE PUBLIC LAND USE PLAN

Intended use	Designation	Definition
Used exclusively for conservation, forest protection or recreation	Ecological reserve	Territorial unit established or about to be established under the Act respecting ecological reserves*
	Park	Territorial unit established or about to be established under the Parks Act*
Forest production prohibited		*Projects accepted by CAMPADR (Comité ministériel permanent de l'aménagement et du développement régional).
Multiple use **Forest production permitted**	Conservation zone	Territorial unit where forest operations are subordinated to the conservation of the environment. . **Habitats of endangered or threatened wildlife or plant species:** Territorial unit established under the Act respecting endangered or threatened species and amending the Act respecting the conservation and development of wildlife, where conditions have been fixed for the use of resources and land so as to protect and manage certain wildlife and plant species and their habitats. . **Wildlife sanctuary:** Territorial unit established under the Act respecting the conservation and development of wildlife, where conditions have been fixed for the use of resources and land for purposes other than recreation so as to conserve wildlife habitats. . **Wildlife area:** Territorial unit currently used intensively by

		certain wildlife species and constituting an essential habitat. . **Recreation area:** Territorial unit currently equipped with the facilities or infrastructures required for the practice of one or more forms of intensive recreation. . **Site reserved for public use:** Territorial unit currently used for public purposes, the rights to which are recognized by the Government, or of special importance for tourism or of special ecological, historical, cultural, educational, geological or archeological significance. . **Agricultural area:** Territorial unit included in the agricultural zone defined by the Act to preserve agricultural land.
Multiple use Forest production given priority	Forest production and wildlife zone	Territorial unit suitable for forest production and whose biophysical features are optimal for meeting the needs of certain wildlife species (white-tailed deer, waterfowl).
	Forest production and recreation zone	Territorial unit suitable for forest production and whose biophysical features are able to sustain the facilities required for practicing various forms of intensive recreation.
	Forest production zone	Territorial unit oriented toward production but including other natural resources, and whose biophysical features are maintained through forestry techniques.

INTRODUCTION

By virtue of the mandate and the powers conferred upon it by the **Forest Act** and the **Act respecting the ministère de l'Énergie et des Ressources**, the MER has developed an important management tool, the guidebook entitled: **Toward New Harmony in the Forest - Standards of Forest Management.** This guidebook describes the silvicultural practices authorized for a given territorial unit, along with the measures which must be implemented by all public and private parties operating in the forest to ensure that the function assigned to each territorial unit is respected, that the forest is developed and that the various forest resources are protected.

The management standards are determined by the various components of the public land use map which are grouped into three categories. The first category comprises lands with a high potential for forest production, recreation or wildlife. It includes the "forest production zone" (Chapter 1), the "forest production and recreation zone" (Chapter 2) and the "forest production and wildlife zone" (Chapter 3). These lands are intended primarily for forest production, although extensive recreational activities may be practiced, as long as they do not require the introduction of extensive facilities or infrastructures.

The second category, the "conservation zone" (Chapter 4), comprises plant habitats, wildlife sanctuaries, wildlife areas, recreation areas, sites reserved for public use, and land zoned for agriculture. The special function of these lands does not prohibit forest production, but the works re-

quired for this production must be adapted to the resources in the zone and the existing facilities. The works must also be conducted so as to respect the ecological, historical or cultural value of these lands.

The third category comprises provincial parks, ecological reserves and Category 1 lands (Chapter 5) defined in the **Act respecting the land regime in the James Bay and New Québec territories.** Provincial parks and ecological reserves are used exclusively for conservation, recreation and forest protection purposes. All forest, mining and energy production activities are prohibited. Furthermore, access to Category 1 lands is controlled by Cree beneficiaries, who also decide how they are to be used.

Since the **Regulation respecting standards of forest management** was adopted under the **Forest Act**, the majority of the standards and measures presented in the Guidebook have had force of law. However, **Toward New Harmony in the Forest** remains a useful document for forest users because it explains these standards and measures in simple layman's terms.

Some of the management standards described in the Guidebook refer to sites whose delimitation and use are governed by legislation administered by other departments. They are included here because the ministère de l'Énergie et des Ressources felt that all the forest management standards should be presented in a single publication. The implementation of these measures by all forest users will ensure compliance with the assigned function of public lands and the optimal development of the resources they contain. To simplify the application of the Guide and to facilitate relations between forest users

and the Government, officials from the ministère de l'Énergie et des Ressources and the ministère de l'Environnement will examine the possibility of establishing certain administrative arrangements and, if need be, procedures for sharing information on matters of mutual concern.

An administrative agreement has already been signed by the ministère de l'Énergie et des Ressources, the ministère de l'Environnement and the ministère du Loisir, de la Chasse et de la Pêche for the purpose of monitoring the implementation of the Regulation respecting standards of forest management. The three departments have agreed to set up regional interdepartmental committees responsible for making annual evaluations of the implementation of the Regulation and, if necessary, drafting proposals for adapting the forest management standards and for increasing their effectiveness. They have also agreed to set up a central interdepartmental committee to analyze reports submitted by the regional committees and to recommend amendments to the Regulation as required.

CHAPTER 1

THE FOREST PRODUCTION ZONE

1.1 Introduction

The forest production zone comprises lands that are reserved primarily for the production of wood. The forest is a resource essential to the maintenance and development of wildlife populations, to the preservation of the quality of our air and water, and to the pursuit of numerous outdoor recreational activities. The forest production zone is primarily reserved for wood production, but this does not preclude the development of other forest resources nor the practice of recreational activities not requiring major installations (cottages, observation areas and public buildings).

As a rule, natural regeneration following tree harvesting is sufficient to enable the forest to fulfill its role with respect to ecology, wildlife and recreation, provided that sufficient forest cover is left to shelter wildlife. But natural regeneration does not always meet the needs of the forest industry, and additional measures must be taken.

The management standards for timber harvesting are therefore defined on the basis of the biophysical features of each forest site or area. These standards make it possible to preserve a forest cover composed of the species needed to supply wood processing mills, while protecting other forest resources. For instance, even though the section "Wildlife areas" includes speci-

fic standards to protect deer yards, which are classified "essential wildlife habitats", forest management standards should help to preserve adequate habitats for white-tailed deer throughout its distribution area (see Figure 1: Distribution and relative density of white-tailed deer populations). Should these standards prove insufficient, additional ones will be introduced.

Distribution and relative density of white-tailed deer populations

High
Moderate
Low
Rare or absent
Island

(Potvin, 1979)

In accordance with the Act respecting the land regime in the James Bay and New Québec territories and the James Bay and Northern Québec Agreement, forest management plans and annual management plans take into special account hunting, fishing and trapping activities of native people on Category II lands.

Moreover, there are territories designated for the purpose of wildlife management (wildlife reserves, wildlife management areas (ZECs) and outfitting operations) for which the ministère du Loisir, de la Chasse et de la Pêche has laid down certain guidelines. In these territories, which may

comprise several land use zones, the ministère du Loisir, de la Chasse et de la Pêche is seeking to maintain and even improve the quality of recreational activities related to wildlife. Although the management standards set for each zone foster wildlife preservation by ensuring adequate residual cover and regeneration of the forest, the quality of recreational activities practiced in these territories remains a major concern. The management standards applying to recreation areas and sites reserved for public use partially address this concern, but the ministère du Loisir, de la Chasse et de la Pêche, working in collaboration with the ministère de l'Énergie et des Ressources, has devised a certain number of additional measures to maintain the quality of recreational activities in wildlife areas.

In short, Chapter 1 contains the basic standards which are designed to protect the various resources found throughout Québec's public lands.

1.2 Management standards

1.2.1 Forest regeneration

Concern for the regeneration of Québec's forests is amply justified by their importance to the economy, not only in terms of wood production, but also for the protection of other forest resources. We cannot afford to abandon logged areas without ensuring their regeneration with desirable species.

Harvesting methods must therefore be adjusted so that all harvesting areas can be regenerated with desirable species. (For example, skidders with high

flotation tires must be used to protect thin or clayey soils, or soils subject to erosion, so as to maintain their productivity.) The ecological requirements of the harvesting areas must also be respected and the time required for regeneration must be reduced. The goal of these measures is to obtain a level of production at least equivalent to that of the stands prior to harvesting.

Ensuring forest regeneration

Adjusting logging practices to ensure
natural or artificial regeneration

Artificial
(Stands not regenerating naturally : genetic and other improvements)

Natural
(Strip cutting : protection of advance growth)

For this objective to be reached, parts of the logging areas will have to be regenerated, that is reforested or seeded. The aim of artificial regeneration is not to convert hardwood stands into softwood stands, but to restore the productivity of those areas where natural regeneration is insufficient to meet production goals, even though adapted logging techniques were used and the biophysical features of the site were respected.

In addition, to keep pace with growing demand by industry, the output of certain forest areas in southern Québec will have to be raised. One way to accomplish this is by reforesting these areas with fast growing species that have a short cutting cycle.

In line with its efforts to optimize forest production by promoting natural regeneration, the ministère de l'Énergie et des Ressources has published the **Guide de traitements sylvicoles** (ERC-3209-81b), which is updated every year. This guide is a reference tool enabling each forest management permit holder to choose the silvicultural operation best suited to his own operational structure and most conducive to the ultimate goal of ensuring regeneration with desirable species.

Table 1 presents a model of the forest management decision-making process that can be used to achieve this goal. With this approach, permit holders must plan their operations before harvesting to determine whether they should use logging techniques that protect advance regeneration or techniques that foster natural regeneration. In jack pine strata, commercial clear cutting with artificial regeneration or controlled burning seems to be the most effective method.

1.2.2 The hydrographic system

1.2.2.1 Wooded strips along lakeshores and watercourses

A wooded strip must be preserved along lakeshores and watercourses to protect the aquatic environment and preserve forest cover for the wildlife that lives in or travels through these areas. Measures must be taken within this strip to minimize uprooting and promote rejuvenation by opening the forest canopy and establishing an understory. Trees selected for harvesting must be distributed evenly throughout the wooded strip.

TABLE 1

Forest management decision-making process

			Cutting methods		Stocking of desirable species	Regeneration
Planning forest operations prior to logging	Adequate stocking		Commercial clear cutting with advance growth protection	Survey of regeneration	Adequate stocking	Natural regeneration
	Advance regeneration of desirable species				Inadequate stocking Reinforcement planting or reforestation	Natural or artificial regeneration
	Inadequate stocking	Other strata	Regeneration cutting: shelterwood cutting, selection cutting, diameter-limit cutting, seed-tree cutting, strip cutting	Survey of regeneration after cutting	Adequate stocking	Natural regeneration
					Inadequate stocking	
					Reforestation or reinforcement planting Seeding Planting	Natural or artificial regeneration
		Jack pine stratum	Commercial clear cutting		Reforestation Seeding Planting	Artificial regeneration

* See Appendix 3 "Glossary".

The wooded strip along lakeshores and perennial watercourses must be maintained at a width of 20 meters, in addition to the riparian ecotone (transitional zone between the water and trees). This distance must be measured from the tree line along the lakeshore or watercourse.

Protecting lakes and watercourses

20 m
Strip to be preserved, with requirement to harvest one-third of the trees 10 cm or more in diameter

Within this strip, one-third of the trees 10 centimeters or more in diameter must be harvested.[1] Diameter is measured 1.3 meters above the highest ground level if the slope of the strip is less than 40%. (The number of trees to be harvested is calculated based on all the species.) This condition applies to commercial stands where stocking exceeds 60%. However, no machinery may be driven within the wooded strip to avoid damaging the humus.

An opening no wider than five meters may be cleared through the wooded strip to allow access to a lake or permanent watercourse for mineral exploration or for installing the equipment required by such exploration, or for digging

1 This obligation applies if the slope of the wooded strip is less than 40 % and if stocking exceeds 60 % in the merchantable stand.

Trees marked for harvesting must be evenly distributed throughout the wooded strip. Harvesting reduces the risk of uprooting and rejuvenates the stand by creating an opening which promotes the establishment of an understory. Diameter is measured at 1.3 meters above the highest ground level.

a drainage ditch for silvicultural purposes. If an access road is built, tree stumps, grasses and advance regeneration must be left intact.

1.2.2.2 Intermittent watercourses

Intermittent watercourses, whose beds periodically dry up, are identified on the forest map published by the Service de l'inventaire forestier of the ministère de l'Énergie et des Ressources. No machinery may be driven on a strip five meters wide on each side of these watercourses to avoid damaging the humus. The only exceptions to this rule are for road construction, digging a drainage ditch for silvicultural purposes, or installing other infrastructures.

1.2.2.3 Other provisions

The following provisions apply to all lakes, permanent watercourses and intermittent watercourses. The first four are mandated by the Environment Quality Act.

- Without prior authorization, it is prohibited to divert or dig a watercourse, to encroach on a lake or watercourse, or to lower or raise the water level of a lake.

- It is prohibited to use watercourses as access or skidding roads.

- It is prohibited to dump earth, logging debris or any other material into a lake or watercourse.

- It is prohibited to wash machinery in a lake or watercourse, or to dump oil, chemicals or any other pollutant into the water.

- Trees must be felled away from lakes and watercourses. If they do accidently fall into the water, the lake or watercourse must be cleaned and all logging debris removed.

- Adequate bridges, bridgings or culverts must be installed each time a road or a skidding or hauling trail crosses a watercourse (see 1.2.7 "Bridges, culverts and drainage ditches").

1.2.2.4 Regional specifications for hardpan

In areas with a layer of hard, impermeable soil whose destruction could result in landslides or the erosion of embankments (e.g., the Pentecôte and Moisie rivers), the following standards apply:

Protecting hardpan

1 unit
Minimum 60 m
4 units
Hardpan

---

a) the humus must be protected and the hardpan left intact, except for road construction in accordance with the provisions of paragraph C below;

b) the natural drainage system must be respected;

c) the distance between a road and a lake or watercourse must be at least four times the height of the embankment, and must never be less than 60 meters. This distance must be calculated based on the normal high-water mark.

1.2.3 Moose yards

In Québec, the densest moose populations are found in fir stands. Regenerating stands at the sapling stage provide the best habitat for this animal, provided that logging operations leave adequate cover.

The quality of moose habitat is especially important during the winter months, as the animal's movements are restricted when the snow cover exceeds 75 centimeters. In these conditions, the animals gather in small groups in moose yards.

Moose yards

Commercial clear cutting area
120 ha
4 ha
80 ha
3 ha
120 ha
5 ha

Wooded area set aside for a moose yard

Moose yards, usually found on mesic sites (average drainage), support stands in which all the coniferous trees measuring over 10 centimeters in diameter at breast height cover a basal area of 11 square meters per hectare (m^2/ha).

Given the importance of residual forest cover for moose, wooded islands with the features specified in the preceding paragraph must be left intact during clear-cutting operations. These islands, measuring three to ten hectares each, must cover at least 4% of the logged area. If the residual stands delimited prior to cutting operations do not meet these standards, additional wooded islands, preferably of mixed stands, must be preserved to ensure the required 4% minimum. They must be adequately distributed throughout the cutting area.

These standards apply to forest regions 2, 3, 4 and 5 (see map) established in 1974 by Michel Crête of the ministère du Loisir, de la Chasse et de la Pêche based on the regions delimited by Rowe (1959). Division of the six

forest regions for the purpose of studying moose behaviour is based on data gathered during classification studies for the Canada Land Inventory.

To facilitate proper siting of wooded islands in the various forest regions, the ministère du Loisir, de la Chasse et de la Pêche has prepared a guide entitled **Guide préliminaire d'aménagement de l'habitat de l'orignal** (February 1989). The MLCP will take at least a year to check the information contained in this document and the features selected to characterize moose habitats in January. The **Guide** will then be revised and officially published.

Map 2

Crête's forest regions (1974)

1.2.4 Piling, lopping and slashing sites

Sites for piling, lopping and slashing must be located so as to limit the number of watercourses crossed, thereby minimizing as far as possible damage caused by erosion.

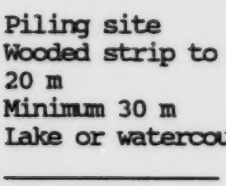
Layout of piling sites

Road
(A) and (B) Piling sites
(Located so as to limit number of watercourse crossings)
(C) Watercourse

Piling, lopping and slashing sites must be located at least 30 meters from a lake or permanent watercourse. Crosscutting sites must be located at least 30 meters from an intermittent watercourse, and piling and lopping areas, at least 20 meters from such a watercourse.

The vegetative cover separating an intermittent watercourse from a piling, lopping or slashing site must be left intact in a 20-meter band along the bank of the watercourse. If disturbed during harvesting, this cover must be reestablished.

Location of a piling site



Runoff from lopping, piling or slashing sites must be channeled toward vegetation areas or rudimentary settling ponds located at least 20 meters from a lake or watercourse.

Piling, lopping and slashing sites must be regenerated with commercial species within two years of the date on which the site is abandoned. If necessary, organic matter is spread on the sites, followed by replanting or seeding.

1.2.5 Piling and slashing sites along lakes and watercourses

In timber drive regions, piling and slashing sites must be set up along lakes and watercourses. The provisions explained in this section must be implemented.

1.2.5.1 Five-year plan for use of piling and slashing sites

Piling and crosscutting sites must be used for more than three years.

The user must prepare a five-year plan indicating the location of both existing and planned piling and slashing sites, and that plan is then submitted for approval to the regional office of the ministère de l'Énergie et des Ressources, which will forward a copy to the appropriate services. Approval by the regional representative of the ministère de l'Énergie et des Ressources must be accompanied by guidelines for the layout of the designated sites and for restoring them to productivity after they have been abandoned.

Once the location of the site has been accepted by the ministère de l'Énergie et des Ressources, the user must send the plan to the regional office of the ministère de l'Environnement, which issues permits for timber driving and for the establishment of piling sites.

The user's plan must indicate:

a) the quantity of wood that will be slashed annually at each piling site;

b) the surface area to be used for each site;

c) the estimated duration of operations at each site;

d) the number of slashers that will be used simultaneously at each site;

e) operation dates.

The plan must be submitted at least one year before works begins on setting up the piling and slashing sites.

1.2.5.2 Selecting a site

Site selection is determined by two primary objectives: firstly, preventing erosion and, secondly, preventing waste (sawdust, branches and pieces of logs) from falling into lakes and watercourses.

1.2.5.3 Layout of the site

The following guidelines must be followed in setting up a piling or slashing site:

a) organic matter removed from the site must be piled more than 30 meters from a lake or watercourse and reserved for later use;

b) if the soil level must be raised, a retaining wall must be built along the water's edge;

c) clearing operations along a lakeshore or watercourse must be kept to a minimum. If the operator is using a single mobile slasher, he may clear up to 300 meters; if using two mobile slashers, he may clear up to 450 meters; if using more than two mobile slashers, he may clear up to 600 meters. In the latter two cases, slashers must be used concurrently on the same site for four months of the year for an authorization to be granted. If the length of the site exceeds the length authorized for clearing along the lakeshore or watercourse, the operator must leave a wooded strip 20 meters wide along the water's edge. One-third of the trees 10 centimeters or more in diameter must be harvested within this strip[1], but no machinery may be driven in this area;

d) slashing waste must be piled at least 30 meters from a lake or watercourse;

e) a wooded strip at least 30 meters wide must be preserved between the main road and a piling site. One-third of the trees 10 centimeters or

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1 This obligation applies if the slope of the wooded strip is less than 40 % and if stocking exceeds 60 % in the merchantable stand.

Trees marked for harvesting must be evenly distributed throughout the wooded strip. Harvesting reduces the risk of uprooting and rejuvenates the stand by creating an opening which promotes the establishment of an understory. Diameter is measured at 1.3 meters above the highest ground level.

more in diameter must be harvested within this strip[1] and the number of crossings must be kept to a minimum;

f) runoff from these areas must be channeled toward vegetation areas or rudimentary settling ponds located at least 20 meters from a lake or watercourse.

Layout of a piling site for slashers along a lake or watercourse

30 m
Maximum 600 m
20 m
(A) Main road
(B) Site for piling organic matter
(C) Landfill site for crosscutting waste
(D) Area used by slashers
(E) Wooded strip to be preserved

1.2.5.4 Using a piling and slashing site

All operations on piling and slashing sites must comply with the provisions of the **Environment Quality Act** (R.S.Q., 1989, c. Q-2).

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1 This obligation applies if the slope of the wooded strip is less than 40 % and if stocking exceeds 60 % in the merchantable stand.

Trees marked for harvesting must be evenly distributed throughout the wooded strip. Harvesting reduces the risk of uprooting and rejuvenates the stand by creating an opening which promotes the establishment of an understory. Diameter is measured at 1.3 meters above the highest ground level.

1.2.5.5 Cleaning the site and rehabilitating the soil for forest production

When piling or slashing operations have ended, the management permit holder must clean the site and remove any infrastructures (buildings, etc.) which have been constructed. Unusable materials must be buried at the site provided for slashing waste.

Organic matter removed during preparation of the site must be put back and spread over the ground. The soil must then be prepared for seeding or reforestation, which must be completed within two years after the piling site is abandoned.

Rehabilitating the soil of a piling and slashing site
Original organic matter returned to the site
Reforestation or seeding

1.2.6 Roads

Forest roads must be built in compliance with the **Forest Act**, the **Environment Quality Act** and the regulations made under them. The rules outlined below must also be followed, along with the rules set out in sections 1.2.2 and 1.2.7 of this Guide.

1.2.6.1 The forest road network

The established forest road network, i.e., the main access roads to the forest resource, must be laid out with due consideration for all forest resources, and must be approved by the relevant departments. As stipulated in 4.3.1.2, a wooded strip 30 meters wide must be left along each side of forest roads.

During construction of a forest road, the following conditions apply:

a) operators must respect the natural drainage of the land by installing culverts adequate to maintain normal runoff;

b) roads may not be built within 60 meters of a lake or permanent watercourse, or within 30 meters of an intermittent watercourse, unless the topography or hydrography of the area makes it impossible to comply with these requirements. In such cases, prior authorization must be obtained from the MER.

c) Roads should not be built on unstable terrain (swamps, floodplains, steep slopes, etc.).

d) Where possible, intersections with roads or watercourses must be built at right angles so as to reduce environmental impact to a minimum.

e) At intersections with watercourses, a band of vegetation 30 meters wide must be left intact on each bank and on both sides of the road (if damaged during construction, the band of vegetation must be reestablished).

f) A layer of soil must be left between the drainage ditches and the outer limits of the right of way (i.e., the width of the corridor which must be cleared for the construction of a road). The vegetative cover must be reestablished within this area.

g) If a road is built on a slope of at least 9%, runoff from the ditches must be diverted toward vegetation areas or rudimentary settling ponds at least every 65 meters.

h) Material removed during road construction must not be piled along the right of way or in the space between the shoulder of the road and the outer limits of the right of way (the right of way must be graded or leveled within this area).

i) Appropriate techniques (gabions, riprap, vegetation, slope grading, geotextile covering, etc.) must be used to stabilize the excavated soil and new fill.

j) The width of the right of way must not exceed four times that of the roadway.

k) Soil may not be removed beyond the limits of the right of way, except in a sand or gravel pit.

Respecting the natural drainage system

Natural drainage
Proposed road

Pond formation in the absence of a culvert

Drainage maintained with culverts

Intersection with watercourse

Spawning grounds
Current

Approaches to an intersection

Right of way
Vegetative cover to be preserved
Minimum 30 m
Driving surface
Vegetative cover to be preserved

1.2.6.2 Skidding and hauling trails

During tree harvesting, skidders and haulers operating on slopes often leave ruts, which act as channels for surface water. Sediments flushed down these ruts by rainwater can alter the quality of surrounding lakes and watercourses. This surface water must be diverted toward vegetation areas or into

rudimentary settling ponds located at least 20 meters from a lake or watercourse. This distance must be measured from the normal high-water mark.

Preserving the hydrographic system

Diverting runoff

Diverting runoff

Diagonal ditches on skidding trails

Diverting runoff

Diverting runoff

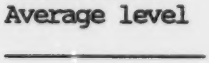
Surface water can be diverted by spreading logging debris, felling non-merchantable trees across trails, changing logging methods or digging diagonal ditches across skidding and hauling trails. Appendix 1 shows the required distance between diagonal ditches, depending on the type of soil.

Where a skidding or hauling trail crosses a watercourse, a bridge or a bridging must be built or a culvert at least 45 centimeters in diameter or the equivalent must be installed. The culvert opening must be large enough for the flood flow. These requirements do not apply if the ground and watercourse are frozen to a depth of at least 35 centimeters.

1.2.7 Bridges, bridgings, culverts, and drainage ditches

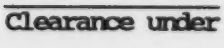
Bridges, bridgings, culverts and drainage ditches must be large enough to accommodate the flood flow (Appendix 2). Where a road crosses a watercourse, a bridge must be built or a culvert at least 45 centimeters in diameter or the equivalent must be installed. If the road is to be used for less than one year, a temporary bridging may be built. This requirement does not apply for winter roads where the watercourse is frozen to a depth of at least 35 centimeters.

Adequate dimensions for bridges and culverts



The approaches to a bridge or culvert must not encroach on the stream bed. In rare instances, where no other solution is possible, the watercourse may be narrowed by no more than 20%. If a bridge is built over a watercourse that is or could be used as a developed canoe-camping or downriver canoeing course, a minimum clearance of 1.25 meters must be left above the normal high-water mark.

Clearance under a bridge over a watercourse used for canoeing



Water diversion structures (channels, dikes or caissons) installed during the construction of a bridge or the installation of a culvert must not obstruct the passage of fish, or block more than one-third of the width of the watercourse. If channels have to be dug to divert a watercourse during construction, they must be filled in when no longer in use.

It is generally preferable to build arch culverts, as these do not disturb the bed of the watercourse. However, if a culvert with a bottom is installed, the base must be sunk deep enough to allow the natural bed of the watercourse to resettle. Culverts must also extend beyond the edge of the backfill that supports the road.

Approaches to a bridge

Adequate layout
Caisson
Rocks
Acceptable layout
Maximum encroachment: 20%
Caisson

Height of a bridge over a watercourse used for canoeing

Culvert with flat bottom

Installation
Level of original stream bed
Restored stream bed
Backfill
Cushion of packed gravel

Installing a culvert

Ends of culvert must extend beyond backfill
Approaches to culvert stabilized
Stream bed stabilized at culvert openings

If necessary, the bed of the watercourse must be stabilized with coarse material (stones) at each opening of the culvert to prevent erosion. Care must be taken not to obstruct the passage of fish. Backfill near the culvert must be stabilized with vegetation, rocks, wire netting, sand or cement bags, etc.

In the vicinity of a watercourse, runoff from drainage ditches must be diverted toward vegetation areas or into rudimentary settling ponds. The diversion must be at least 20 meters from the watercourse to ensure that the accumulated flow rate of the water does not carry it directly into the stream. A second diversion must also be installed between the first one and the watercourse to prevent drainage water from flowing into the stream. These measures are aimed at preventing the deposition of sediment in the watercourse.

Bridges and culverts installed during forest road construction must be permanent, and authorization must be obtained from the ministère de l'Énergie et des Ressources before they can be removed.

Runoff from ditches

Water diverted toward vegetation
Blockage of ditches
Ditches
Crossing
20 m

1.2.8 Campsites

The ministère de l'Énergie et des Ressources must approve the selection of an area to be cleared for a campsite, as well as the planned procedures for restoring it to its original state. No campsite may be set up within 30 meters of a lake or permanent watercourse. This distance must be measured from the tree line along the lakeshore or watercourse.

A wooded strip 20 meters wide must be preserved along the lakeshore or watercourse. Within this strip, one-third of the trees 10 centimeters or more in diameter must be harvested[1]. No heavy machinery may be driven within the strip.

No more than three openings may be cleared for the view, provided that each one measures no more than 10% of the section of the camp bordering on the

[1] This obligation applies if the slope of the wooded strip is less than 40 % and if stocking exceeds 60 % in the merchantable stand.

Trees marked for harvesting must be evenly distributed throughout the wooded strip. Harvesting reduces the risk of uprooting and rejuvenates the stand by creating an opening which promotes the establishment of an understory. Diameter is measured at 1.3 meters above the highest ground level.

lake or watercourse. Stumps, grasses and advance regeneration must be left intact.

Drainage water from camps must be channeled toward vegetation areas.

Only one access road may be built to the lake or watercourse. It must be no wider than five meters, and the soil must be well stabilized and drained. As with piling and crosscutting sites, abandoned campsites must be cleaned and restored to productivity. This means that the soil must be prepared for seeding or reforestation within two years after the site is abandoned.

Layout of campsites

10 m
20 m
(A) Access road to water
(B) Buildings
(C) Openings for view
(D) Runoff

Restoring campsites

Reforestation or seeding

1.2.9 Power transmission lines

Wherever possible, new power transmission lines must be built within the forest production zone. Their installation and maintenance must comply with

the regulations made under the **Environment Quality Act** and the standards outlined below.

1.2.9.1 Power line corridors

Stump removal must be limited to a strict minimum.

The clearing and leveling of slopes and construction sites must be minimized to prevent soil erosion.

On steep slopes or other terrain where the risk of erosion is high, terracing or other protective techniques must be used.

When merchantable trees are being skidded, circulation of machinery must be limited to reduce soil disturbance.

1.2.9.2 Wooded strips along lakeshores, watercourses and forest roads

Wooded strips 30 meters wide must be preserved along roads and 20 meters wide along lakeshores and permanent watercourses. Management permits holders must harvest one-third of all the trees 10 centimeters or more in diameter growing

in these wooded strips[1]. It is prohibited to drive heavy machinery within the 20-meter strip.

If crossing a watercourse is unavoidable, a permanent or temporary bridge must be built, or a culvert at least 45 centimeters in diameter or the equivalent must be installed. The culvert opening must be large enough for the flood flow. This requirement does not apply if the watercourse is frozen to a depth of at least 35 centimeters. In this case, a 9-meter opening may be cleared through the wooded strips to allow machinery to pass.

Intersection of roads and power transmission lines

30 m
9 m
Power transmission line
Wooded strip to be preserved

It is prohibited to pile waste within 30 meters of a lake or watercourse.

If maintenance of the right of way requires felling all the trees growing within 20 meters of a lake or permanent watercourse, the cutting operation must be done by hand.

1 This obligation applies if the slope of the wooded strip is less than 40 % and if stocking exceeds 60 % in the merchantable stand.

Trees marked for harvesting must be evenly distributed throughout the wooded strip. Harvesting reduces the risk of uprooting and rejuvenates the stand by creating an opening which promotes the establishment of an understory. Diameter is measured at 1.3 meters above the highest ground level.

Lakes and rivers must be protected against runoff containing pollutants and against any other phenomenon that could cause or increase turbidity, i.e., muddiness caused by sediment disturbance or materials in suspension.

1.2.9.3 Unstable terrain

On steep slopes situated along a lake or watercourse and subject to erosion or landslides, clearing must be done by hand during seasons when this operation will cause the least disturbance.

1.2.10 Nurseries, arboretums, seed orchards and seed stands

These sites have been designated by the ministère de l'Énergie et des Ressources for experiments in forest genetics and the production of tree seeds and seedlings.

These sites must be protected by maintaining a surrounding wooded strip 60 meters wide.

Nursery

60 m

1.2.11 Mineral exploration and mining

For any activity related to mineral exploration or mining, the measures set forth in sections 1.2.6 (roads), 1.2.7 (bridges, bridgings, culverts and drainage ditches) and 1.2.8 (campsites) must be applied. The requirement to preserve a wooded strip, as stipulated in 1.2.2, applies only in the case of mineral exploration.

Mineral exploration site	
Organic matter	
	20 m
	10 m
	5 m

Before beginning mineral exploration work, organic matter must be removed and piled up at least 30 meters from any lake or watercourse. As exploration is completed in each trench or excavation, the land must be filled in and the organic matter spread over the surface.

Mining sites must be regenerated with commercial species within two years after they are abandoned.

1.2.12 Size of cutting areas

The maximum area allowed for clear cutting is 250 hectares in a single block.

A wooded strip at least 60 meters wide must be preserved between two clear cutting areas if neither of these areas exceeds 150 hectares.

If one of the clear-cutting areas exceeds 150 hectares, the strip must be 100 meters wide. These wooded strips must be left intact until regeneration in the clear-cut areas has reached an average height of 2 meters.

Wooded strips between clear-cutting areas

6 ha
140 ha
60 m
120 ha
5 ha
100 m
200 ha
8 ha

Clear-cutting area
Moose yard

1.2.13 Drainage ditches for silvicultural purposes

If a drainage ditch is excavated for silvicultural purposes, a settling pond must be dug at least 20 meters from the watercourse into which the ditch flows.

This pond must be dredged when there is less than 30 centimeters of water over 50% or more of its surface.

Drainage ditch
Collection ditch
Settling pond
Watercourse

20 m

1.2.14 Public islands

On an island of less than 250 hectares or in a forest production and recreation zone located on an island of 250 hectares or more, selection cutting must be used to harvest no more than 30% of the stands basal area.

When logging a stand on an island of 250 to 500 hectares or in a forest production and wildlife zone located on an island of more than 500 hectares, care must be taken to ensure that cutting areas will regenerate naturally with commercial species. Clear-cutting is prohibited on these sites.

1.2.15 Trapping camps

When forest management operations are carried out in a logging area in which a wooden camp has been erected as shelter for trappers, a 4000-square-meter area of forest must be left intact, including the area occupied by the camp.

Trapping camp

4000 m^2 area, including camp
Lake
20 m

1.2.16 Lands under lease

A management permit holder must leave intact any land which has been leased under section 47 of the **Act respecting the lands in the public domain.**

CHAPTER 2

THE FOREST PRODUCTION AND RECREATION ZONE

2.1 Introduction

The forest production and recreation zone comprises lands which are valuable not only for their timber, but also for certain particularly interesting biophysical features which render them suitable for possible recreational uses. The delimitation of this zone is based primarily on the Canada Land Inventory and includes sites that are considered exceptional or that could be developed for the benefit of the whole community. It is important to protect the potential of these sites through appropriate measures.

Delimiting such territorial units in effect constitutes a policy plan for future recreational development of public lands. These units will be available for development when current recreational sites no longer meet the demand.

2.2 Management standards

Management standards for tree harvesting in the forest production and recreation zone will be defined on the basis of the biophysical features which characterize each territorial unit and determine its intended use. They will be aimed at maintaining or restoring the forest cover. In areas within this

zone where no recreational development is anticipated for ten years following the year in which logging operations are planned, the management standards are the same as those for the forest production zone (see Chapter 1).

If a definite plan exists for recreational development within this ten-year period (preliminary studies underway or completed), the management standards to be applied are the same standards that apply to these types of facilities in the conservation zone (see Chapter 4).

CHAPTER 3

THE FOREST PRODUCTION AND WILDLIFE ZONE

3.1 Introduction

The forest production and wildlife zone comprises lands which are important not only for their timber, but also for certain biophysical features of particular importance to white-tailed deer and waterfowl.

The climate and soil of these territorial units support the growth of vegetation that provides deer with both food and shelter.

The delimitation of these units is also based on the various species of waterfowl and their particular needs in terms of climate, ecology and soil characteristics.

The forest production and wildlife zone was established to protect sites which, according to the Canada Land Inventory, might possibly serve as essential wintering grounds for deer or provide structural features necessary to wildfowl. If this is proved or disproved to be the case, the site either becomes a wildlife area within the conservation zone or a part of the forest production zone, and the appropriate management standards are applied.

3.2 Management standards

3.2.1 White-tailed deer

Management standards aimed at preserving or introducing the food and shelter needed by white-tailed deer must comply with directives issued jointly by the ministère de l'Énergie et des Ressources and the ministère du Loisir, de la Chasse et de la Pêche as to the type, duration and dates of harvesting. The nature and intensity of operations in these areas will depend on stand distribution within the zone. Commercial clear-cutting is prohibited.

3.2.2 Waterfowl

A wooded strip 20 meters wide must be left intact around sites designated as potential waterfowl habitats.

CHAPTER 4

THE CONSERVATION ZONE

4.1 Introduction

The conservation zone comprises the following territorial units: recreation areas and sites reserved for public use, which are equipped with various facilities and infrastructures; wildlife areas, which contain essential wildlife habitats; plant habitats within the meaning of Bill 108[1], where endangered or threatened plant species grow; areas where use of the resources and territory for purposes other than recreation must comply with special measures aimed at preserving wildlife sanctuaries; and agricultural areas, which are zoned for agriculture.

These sites have a specific intended use, generally recognized by the Government. They are governed by statutes and regulations which:

a) control zoning practices (e.g., the **Act to preserve agricultural land**);

b) protect Québec's cultural and historical heritage (e.g., the **Cultural Property Act**);

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1 An Act respecting endangered or threatened species and amending the Act respecting the conservation and development of wildlife

c) protect wildlife habitats (e.g., the **Act amending the Act respecting the conservation and development of wildlife**);

d) protect endangered or threatened species (e.g., the **Act respecting endangered or threatened species and amending the Act respecting the conservation and development of wildfife**).

These sites are also governed by the following administrative measures:

public lands leasing permits, issued by the ministère de l'Énergie et des Ressources (e.g., leases for residential vacation lots); and administrative agreements between the ministère de l'Énergie et des Ressources and certain departments, municipalities or other organizations concerning public land use rights and resource protection (e.g., research forests, interpretation centers, outdoor recreation areas, cross-country ski trails, beaver habitats, etc.).

4.2 The site, its immediate environment and visual setting

A. The site:

In the case of recreation areas and sites reserved for public use, the site is the actual space where the activity takes place. It includes all the facilities directly necessary for the activity, and often comprises secondary facilities as well. The ministère du Loisir, de la Chasse et de la Pêche is responsible for designating and delimiting wildlife areas and sanctuaries.

In the case of plant habitats, this responsibility falls to the ministère de l'Environnement.

The space reserved for each activity is indicated in the following paragraphs.

B. Immediate environment

The immediate environment is the area adjacent to the site. It often includes space that may eventually be used to expand infrastructures or add facilities. In sum, it is the space that surrounds the site and constitutes the physical extension thereof. The immediate environment is of particular importance in the case of recreation areas and sites reserved for public use. Forest operations must be conducted in such a way as not to alter the quality of the recreational activities practiced there.

C. Visual setting

When forest operations are being planned, consideration must be given to the visual setting of certain recreation areas and sites reserved for public use in order to maintain the quality of the activities for which each site is intended. The landscape visible from a site constitutes its visual setting. The maximum distance between a site and the outer limit of its visual setting is 1.5 kilometers.

4.2.1 Criteria for silvicultural operations

Definitions for each of the silvicultural operations mentioned in this section are provided in Appendix 3.

a) **Commercial clear-cutting:**

No commercial clear-cutting may be done on a site, in its immediate environment or within its visual setting.

b) **Strip cutting:**

It is suggested that strip cutting be done by adjacent strips (i.e., one strip out of three) at intervals of 15 to 20 years, depending on the growth rate of the trees and the local climate.

Illustration of strip cutting (20-year period)

1st cut (1986)

1st cut 1st cut

Strip reserved for future cuts
2nd cut (2006)

2nd cut 2nd cut

Regeneration of 1st cut
3rd cut (2026)

3rd cut 3rd cut

Regeneration of 1st cut
Regeneration of 2nd cut

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c) **Patch cutting:**

Patch cutting is perhaps the best way to meet the objectives outlined in this chapter. It fosters stand diversification (composition and structure), thus enhancing the value of an area. Certain precautions must be taken:

- the total area of the logged patches must be in direct proportion to that of the visual setting and must never exceed 30 hectares;

- the outlines of the patches must not be straight, they should blend in with the landscape and follow the lay of the land;

- if patch cutting is used within a visual setting, at least three patches must be cleared. Their total area must never exceed one-third of the visual setting for each third of the rotation period. The rotation period is the number of years required for a stand to grow and mature on a logged area. Thus, if the rotation period is 60 years, within a 20-year period, logging may be conducted on at least three patches with a total area not exceeding one-third of the area of the visual setting.

Patch cutting
First patches logged

Limited, asymetrical patches
Shape determined by the lay of the land

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d) **Selection cutting:**

A forest of uneven-aged trees provides a better setting for recreational activities, as a diversified forest cover is more pleasing to the eye and ensures a more stable forest environment.

Selection cutting

Results of selection cutting
Results of other cuts
A forest made up of trees of varying ages and heights is preferable to a forest where the trees are all of equal age and height

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Selection cutting is strongly recommended for the recreation area itself and for the sections of its immediate environment that are highly visible or likely to attract hikers.

e) **Selection thinning:**

Selection thinning consists in removing a certain number of dominant trees to encourage the development of smaller ones.

f) **Diameter-limit cutting**

Before using this logging method, it is recommended that the composition of the forest be analyzed to determine the diameter of the trees to be harvested. This will safeguard the beauty of recreational sites against overcutting.

Illustration of selection thinning

Original stand
Trees cut
Residual stand

Diameter-limit cutting

Before cutting
(A) Trees to be cut
After cutting

g) Sanitation cutting:

Sanitation cutting is beneficial in sites reserved for recreational activities, but it is generally not recommended for interpretation centers or ecological centers. This method eliminates dead, diseased or uprooted trees that reduce the recreational value of a sector or endanger the safety of visitors.

Sanitation cutting must be kept to a minimum, however, as dead and fallen trees are essential for many animal and plant species.

Sanitation cutting

Before cutting
Dead or diseased trees
Trees uprooted by the wind
Burnt trees, etc.
After cutting

4.3 Conservation objectives

Forest areas within the conservation zone are obviously also a source of timber. This wood may be harvested, partially or completely, at particular times and in particular areas.

However, if silvicultural operations are conducted on sites reserved for public use, in wildlife or recreation areas or in areas zoned for agriculture, the management standards must ensure the maintenance of a residual forest cover, which is essential to preserving both the quality of the site and its biophysical features. In specific instances, the management standards for recreational sites and sites reserved for public use may differ from the standards set forth in this chapter, but only if all the parties concerned, including government departments, are in agreement.

If a visual setting is included in the immediate environment of a recreation area or site reserved for public use, all the wood produced in that setting must be harvested during the rotation period of the stands growing there. Selection thinning, strip cutting, individual selection cutting, sanitation cutting and patch cutting are all recommended. The size and shape of cutting areas must be dictated by the lay of the land.

4.3.1 Sites reserved for public use

This category comprises territorial units currently used for public purposes, the rights to which are granted by the Government. Also included in this category are sites of special importance as tourist attractions or for their ecological, historical, cultural, educational, geological or archeological features.

Management standards for these sites must ensure that their quality and special function is preserved.

4.3.1.1 Water intakes

a) Definition:

The site consists of the municipal water intake or the water intake of a private system whose construction and use have been authorized under section 32 of the Environment Quality Act. The site also includes the related infrastructures and the 60-meter strip of vegetation that surrounds the water intake.

Water intake

Pump
60 m
Water intake
20 m
Wooded strip to be preserved

The concept of immediate environment does not apply in this case.

b) Management standards:

No forest operations are permitted on the site of a water intake.

4.3.1.2 Road corridors and scenic routes

a) Definition

The site of a road corridor includes a public highway numbered by the ministère des Transports or an access road leading to a reception center or an accommodation center with at least 10 rooms, situated on an outfitter's territory or in a wildlife management area (ZEC) or wildlife reserve. The site also includes a wooded strip 30 meters wide on each side of the right of way of the highway or access road. Roads belonging to the network designated by the ministère de l'Énergie et des Ressources are included with the public highways numbered by the ministère des Transports.

Scenic road corridor

30 m
Maximum 1.5 km
Wooded strip to be preserved
In the case of a scenic route, the limits of the visual setting may vary depending upon the lay of the land.

A scenic route is a road corridor whose visual setting is constituted by the landscape visible from the road up to a maximum distance of 1.5 kilometers. Scenic routes include roads which have been numbered and designated as major interregional highways and suggested itineraries on maps in the Tourist

Guides published jointly by the ministère du Tourisme and the regional tourism associations.

b) Management standards:

Only selection thinning, sanitation cutting and individual selection cutting are permitted on the site of a road corridor.

Openings cut through the bordering wooded strip during logging operations must be separated by a least 500 meters.

Within the 30-meter wooded strip preserved on each side of the road, one-third of the trees 10 centimeters or more in diameter must be harvested.[1]

Patch cutting is recommended for the visual setting of a scenic route. The outlines of the patches should follow the lay of the land.

Strip cutting, selection thinning and diameter-limit cutting may also be used, if necessary.

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1 This obligation applies if the slope of the wooded strip is less than 40 % and if stocking exceeds 60 % in the merchantable stand.

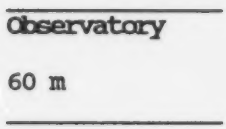
Trees marked for harvesting must be evenly distributed throughout the wooded strip. Harvesting reduces the risk of uprooting and rejuvenates the stand by creating an opening which promotes the establishment of an understory. Diameter is measured at 1.3 meters above the highest ground level.

4.3.1.3 Observatories

a) **Definition:**

The **site** of an observatory comprises the infrastructures required for astronomical and meteorological observation, as well as the surrounding service areas (parking lot, etc.).

The **immediate environment** of an observatory consist of a wooded strip 60 meters wide preserved around the site.



b) **Management standards**

No forest operations are permitted on the site itself.

In the **immediate environment** of an observatory, one-third of the trees 10

centimeters or more in diameter must be harvested.[1] Only sanitation cutting, selection thinning and individual selection cutting are permitted.

4.3.1.4 Refreshment and accommodation areas

a) Definition:

Refreshment and accommodation areas are sites on which various infrastructures have been installed to allow travelers to eat and rest along a road corridor, or areas on which commercial establishments have been built to offer accommodation to hunters or anglers (e.g., outfitting operations).

The immediate environment of these sites consists of a wooded strip 60 meters wide preserved around the site. A visual setting must be delimited around an accommodation center with at least 10 rooms, located on an outfitter's territory or in a wildlife management zone (ZEC) or wildlife area, as defined in the Act respecting the conservation and development of wildlife.

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1 This obligation applies if the slope of the wooded strip is less than 40 % and if stocking exceeds 60 % in the merchantable stand.

Trees marked for harvesting must be evenly distributed throughout the wooded strip. Harvesting reduces the risk of uprooting and rejuvenates the stand by creating an opening which promotes the establishment of an understory. Diameter is measured at 1.3 meters above the highest ground level.

Refreshment or accomodation area

60 m

b) **Management standards:**

No forest operations are permitted on the site itself.

In the **immediate environment** of a refreshment or accommodation area, one-third of the trees 10 centimeters or more in diameter must be harvested[1]. Only sanitation cutting, selection thinning and individual selection cutting are permitted.

All cuts are permitted within the **visual setting**, except commercial clear cutting.

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1 This obligation applies if the slope of the wooded strip is less than 40 % and if stocking exceeds 60 % in the merchantable stand.

Trees marked for harvesting must be evenly distributed throughout the wooded strip. Harvesting reduces the risk of uprooting and rejuvenates the stand by creating an opening which promotes the establishment of an understory. Diameter is measured at 1.3 meters above the highest ground level.

4.3.1.5 Research forests

a) Definition:

The site of a research forest includes not only the actual woodlot, but also any infrastructures that have been installed for educational purposes.

The concept of immediate environment does not apply in this case.

b) Management standards:

Only silvicultural operations in line with educational objectives are permitted on these sites.

4.3.1.6 Forest education centers, ecological centers and nature interpretation centers

a) Definition:

These sites generally constitute a territory reserved for educational activities or nature interpretation and include service areas set up for these purposes.

The concept of immediate environment does not apply in this case.

b) Management standards:

Only silvicultural treatments in line with educational and interpretation objectives and the preservation of facilities and infrastructures are permitted on these sites. Trees or parts of trees which fall on recreation trails during logging operations must be removed. These trails may not be used for skidding, hauling or trucking.

Commercial clear cutting is prohibited on these sites.

4.3.1.7 Geological and archeological sites

a) Definition:

Geological and archeological sites are designated by the Government. They contain geological formations of a particular instructional value, or structures and artifacts bearing witness to prehistorical or historical human activity (archeological property). Caves and sites on which caverns have been found belong to this category.

The concept of **immediate environment** does not apply in this case.

b) Management standards:

No forest operations are permitted on these sites.

4.3.1.8 Historic sites and districts

a) **Definition:**

These sites are designated by the Government because historic monuments are concentrated there or because decisive events in the history of Québec took place there.

The concept of **immediate environment** does not apply in this case.

b) **Management standards:**

No forest operations are permitted on these sites.

4.3.1.9 Fish hatcheries

a) **Definition:**

Fish hatcheries are sites where fish breeding and production are authorized. The infrastructures and equipment required for these activities are part of the site itself.

The concept of **immediate environment** does not apply in this case.

b) Management standards:

These sites are unsuitable for forest operations.

4.3.1.10 Sand and gravel pits

a) Definition:

These sites have been established in accordance with standards defined by the ministère de l'Environnement and are used for the extraction of non-compacted substances, such as sand, gravel and earth.

Regulatory distances for locating sand and gravel pits

Public road	35 m
Lake or perennial watercourse	60 m
Ecological reserve or area	100 m
Dwelling and developed or semi-developed campsite	150 m
Municipal water intake	1000 m

The concept of immediate environment does not apply in this case.

b) Management standards:

The site must be completely logged before starting production. The layer of organic matter must be removed and piled up for later use.

Runoff from the site must be channeled toward vegetation areas or settling ponds located at least 20 meters from a lake or watercourse. This distance must be measured from the normal high-water mark.

When a sand or gravel pit is abandoned:

- the grades must be reduced;
- the surface of the site must be cleared of debris, waste, machine parts and all other litter;
- the organic soil removed before the pit was opened must be spread over the site, which must then be seeded or replanted in order to be restored to productivity.

Where shafts are dug to determine whether high-quality sand or gravel is present in sufficient quantities to warrant extraction, the exploration holes must be refilled and the organic matter spread over the ground if the site proves unsuitable for production.

4.3.1.11 Solid waste sanitary landfill sites and trench dumps

a) Definition:

These sites are designated by the Government for dumping and eliminating waste in accordance with the Regulation respecting solid waste.

The immediate environment of these sites consists of a wooded strip 30 meters wide which must be preserved around the site.

b) Management standards:

These sites are unsuitable for forest operations.

The location, preparation and use of the site must comply with the Regulation respecting solid waste management, made under the Environment Quality Act.

Regulatory distances for locating solid waste sanitary landfill sites and trench dumps

Watercourse	150 m
Lake	300 m
Dwelling or camp (landfill site)	200 m
Dwelling or camp (trench dump)	500 m
Village or residential district	500 m

The site must be surrounded by a drainage system to prevent runoff from coming into contact with the solid waste dumped or buried there.

Solid waste sanitary landfill sites and trench dumps

Landfill site
Drainage of runoff

Under existing legislation, it is prohibited to burn solid waste on a sanitary landfill site.

Only individual selection cutting and selective thinning are permitted in the immediate environment of these sites. One-third of the trees 10 centimeters or more in diameter must be harvested[1].

The number of passages cleared through the wooded strip during logging operations must be kept to a minimum.

Once landfill operations are completed, the site must be replanted with commercial species.

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1 This obligation applies if the slope of the wooded strip is less than 40 % and if stocking exceeds 60 % in the merchantable stand.

Trees marked for harvesting must be evenly distributed throughout the wooded strip. Harvesting reduces the risk of uprooting and rejuvenates the stand by creating an opening which promotes the establishment of an understory. Diameter is measured at 1.3 meters above the highest ground level.

4.3.1.12 Other sites reserved for public use

a) Definition:

These are sites not discussed above, but which have been designated by the Government for public use.

The immediate environment and visual setting of these sites vary according to their intended use and the infrastructures that have been installed.

b) Management standards:

Any silvicultural operation may be used to ensure basic protection of the site, its immediate environment and visual setting, if any.

4.3.1.12.1 Ecological sites

a) Definition:

These sites have been studied by the ministère de l'Environnement and have been analyzed in accordance with the Act respecting ecological reserves. They present natural features of sufficient interest to justify their designation as ecological reserves by the ministère de l'Environnement.

The immediate environment of an ecological site consists of a wooded strip 60 meters wide preserved around the site.

b) Management standards:

No forest operations are permitted on the site before interdepartmental consultations have been completed and the Government has decided whether to designate the site as an ecological reserve.

In the immediate environment of an ecological site, one-third of the trees 10 centimeters or more in diameter must be harvested[1]. Only sanitation cutting, selection thinning and individual selection cutting are permitted.

4.3.2 Wildlife areas

The following section sets forth the management standards which are designed to protect essential forest wildlife habitats identified by the ministère du Loisir, de la Chasse et de la Pêche. Salt licks and caribou yards south of the 52nd parallel are included. A table in Appendix 4 indicates the number of wildlife areas found in each category.

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1 This obligation applies if the slope of the wooded strip is less than 40 % and if stocking exceeds 60 % in the merchantable stand.

Trees marked for harvesting must be evenly distributed throughout the wooded strip. Harvesting reduces the risk of uprooting and rejuvenates the stand by creating an opening which promotes the establishment of an understory. Diameter is measured at 1.3 meters above the highest ground level.

A definition is provided for each type of habitat, followed by the accepted management standards.

4.3.2.1 Waterfowl habitats

a) Definition:

A waterfowl habitat is a geographic entity made up of a floodplain, swamp or intertidal zone, having an area of at least 25 hectares and frequented by geese or ducks. It is delimited by a change in the nature of the substratum or by natural or artificial features of the terrain. At some period of the year, there are concentrations of at least 50 birds per kilometer of shoreline, or 1.5 birds per hectare.

b) Management standards:

These sites are generally unsuitable for forest operations. However, when the ministère du Loisir, de la Chasse et de la Pêche recognizes a waterfowl habitat in the forest, either because there is a concentration of at least 50 birds per kilometer of shoreline at some period of the year or because the area is included in a development project to encourage waterfowl nesting. The 20-meter wide wooded strip preserved to protect the lake or watercourse must be left intact.

Waterfowl habitat

4.3.2.2 Bird colonies

a) Definition:

Bird colonies are cliffs with at least 10 seafowl nests per 100 meters, or islands or peninsulas of less than 50 hectares with at least 25 nests per hectare made by birds, other than herons, living in colonies.

b) Management standards:

No forest operations are permitted on these sites.

Bird colony

4.3.2.3 Caribou calving areas

a) Definition:

These are habitats occupied from May 15 to July 1 by at least five caribou cows per square kilometer.

Caribou calving areas

b) Management standards:

These sites are located north of the 52nd parallel and are therefore unsuitable for forest operations.

4.3.2.4 Muskrat habitats

a) Definition:

These are swamps or ponds which measure at least five hectares and are inhabited by muskrats.

b) Management standards:

A wooded strip 20 meters wide must be preserved along watercourses and around all lakes. Within this strip, one-third of the trees 10 centimeters or more

in diameter must be harvested[1]. Heavy machinery may not be driven within the strip.

Muskrat habitat

4.3.2.5 Fish habitats

a) Definition:

These are watercourses and other bodies of water in which fish are spawned, develop, feed and migrate. In these habitats the water is sufficient in both quantity and quality to maintain fish populations.

b) Management standards:

A wooded strip 20 meters wide must be preserved along watercourses and around the entire lakeshore. Within this strip, one-third of the trees 10 centi-

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1 This obligation applies if the slope of the wooded strip is less than 40 % and if stocking exceeds 60 % in the merchantable stand.

Trees marked for harvesting must be evenly distributed throughout the wooded strip. Harvesting reduces the risk of uprooting and rejuvenates the stand by creating an opening which promotes the establishment of an understory. Diameter is measured at 1.3 meters above the highest ground level.

meters or more in diameter must be harvested[1]. Heavy machinery may not be driven within the strip.

During the construction of crossings, measures must be taken to minimize sediment deposition in watercourses.

Fish habitat

4.3.2.6 Essential supralittoral habitats

a) Definition:

These habitats are found along lakes and watercourses, above the high-water mark, where flooding does not occur. These areas serve as nesting grounds for numerous bird species. Besides, they constitute all or part of the essential habitat of many species of mammals, reptiles and amphibians. They are generally located on a portion of the floodplain or on a strip of vegetation if the floodplain is minimal or non-existent.

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1 This obligation applies if the slope of the wooded strip is less than 40 % and if stocking exceeds 60 % in the merchantable stand.

Trees marked for harvesting must be evenly distributed throughout the wooded strip. Harvesting reduces the risk of uprooting and rejuvenates the stand by creating an opening which promotes the establishment of an understory. Diameter is measured at 1.3 meters above the highest ground level.

Essential supralittoral habitats
20 m Regeneration after cutting

b) Management standards:

The management standards for fish habitats (see 4.3.2.5) also apply to essential supralittoral habitats.
Rapid regeneration of the adjacent territory must be fostered by maintaining part of the stands along lakeshores and watercourses.

4.3.2.7 Beaver habitats

a) Definition:

These are active lodges, burrows, dams and wooded strips located in a territory with no more than six beaver colonies per 25 square kilometers. The wooded strip must be 40 meters wide, measured from the riparian ecotone. It must be left intact for 200 meters along each bank of a watercourse upstream from a beaver dam and must be preserved for 200 meters along the lakeshore on each side of a beaver lodge.

b) Management standards:

A wooded strip 20 meters wide by 200 meters long must be left intact on each side of a watercourse upstream from a dam.

Beaver habitat on a watercourse

(A) Watercourse
(B) Dam
(C) Wooded strip to be preserved
(D) Wooded strip of hardwood trees

A wooded strip 20 meters wide by 200 meters long must be left intact along the lakeshore on each side of a beaver lodge.

Beaver habitat on a lake

40 m
200 m

The hardwood species needed by beavers (poplar, paper birch and grey birch) may not be harvested within an additional 20-meter strip around these sites.

If necessary, the ministère du Loisir, de la Chasse et de la Pêche will inspect sites to be protected.

4.3.2.8 Heronries

a) Definition:

These are sites containing at least five heron nests that have been used during any of the past five nesting seasons. A strip of land 500 meters wide surrounding the heronry is considered an integral part of the site.

Heronry

300 m
200 m
(A) Wooded strip to be preserved
(B) Wooded strip to be harvested between August 1 and March 31

b) Management standards:

The first 200 meters surrounding the nesting grounds must be left intact.

In the area 200 to 500 meters from the nesting grounds, forest management activities are prohibited between April 1 and July 31.

If necessary, the ministère du Loisir, de la Chasse et de la Pêche will check the limits of these sites.

4.3.2.9 Moose yards

a) Definition:

These sites have an area of 3 to 10 hectares and contain stands in which all softwoods measuring more than 10 centimeters in diameter, at 1.3 meters above the highest ground level, cover a basal area of at least 11 square meters per hectare.

b) Management standards:

As mentioned in Chapter 1, during clear-cutting operations, wooded islands measuring 3 to 10 hectares each must be left in sufficient numbers to cover at least 4% of the territory being logged. These islands must be delimited on mesic sites prior to harvesting and ideally should be composed of mixed stands. They must have the characteristics defined for moose yards.

Moose yards

Clear cutting area
100 ha
4 ha
80 ha
3 ha
120 ha
5 ha

Wooded island preserved for a moose yard

4.3.2.10 White-tailed deer yards

a) Definition:

These are habitats of at least one square kilometer where, during any of the past five winters, white-tailed deer have gathered during periods of winter that are critical for the animal (i.e., when the snow cover exceeds 50 centimeters).

b) Management standards:

Logging operations must be conducted in compliance with directives issued by the ministère du Loisir, de la Chasse et de la Pêche as to the type, duration and dates of harvesting, and in such a way as to ensure the availability of the vegetation that provides white-tailed deer with food and shelter.

The **Guide d'aménagement des ravages de cerfs de Virginie** (MLCP, 1986) contains guidelines for the layout of deer yards. The specific objectives for each dear yard measuring 5 km^2 or more and the silvicultural strategy to be applied in that yard are defined in the management plans prepared jointly by the ministère du Loisir, de la Chasse et de la Pêche and the ministère de l'Énergie et des Ressources.

Layout of a white-tailed deer yard

Stand at least 30 years old

These management standards apply even in the case of an insect infestation.

4.3.2.11 Salt licks

a) Definition:

These are swamps, springs or ponds frequented by moose and containing mineral salts with a potassium and sodium content exceeding 3 and 75 parts per million, respectively. These sites are found primarily in the Bas-Saint-Laurent — Gaspésie region (01).

b) Management standards:

A wooded strip 100 meters wide must be left intact around identified salt licks.

Protecting a salt lick

Salt lick
100 m

4.3.2.12 Caribou islands south of the 52nd parallel

a) Definition:

These sites are territorial units occupied by a herd of caribou numbering at least 50 head during the mating, calving and winter feeding periods. All caribou islands are located south of the 52nd parallel.

b) Management standards:

Forest operations must be conducted in such a way as to maintain the vegetation particular to areas used by caribou during the mating, calving and winter feeding periods. Commercial clear cutting is prohibited.

4.3.2.13 Habitats of endangered or threatened wildlife species

a) Definition:

These sites are established under Bill 108 [2] and are designated by the ministère du Loisir, de la Chasse et de la Pêche to protect certain wildlife species. They are established following:

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[2] The Act respecting endangered or threatenec species and amending the Act respecting the conservation and development of wildlife.

1. administrative agreements between the departments responsible for species which may be deemed endangered or threatened;

2. a decision by the Government to designate wildlife species as endangered or threatened.

b) **Management standards:**

No forest operations are permitted on these sites.

A wooded strip 60 meters wide must be left intact around all habitats of endangered or threatened animal species to ensure their protection. One-third of the trees 10 centimeters or more in diameter must be harvested within the wooded strip[1]. Sanitation cutting, selection thinning or individual selection cutting must be used.

4.3.3 Wildlife sanctuaries

Wildlife sanctuaries are territorial units established under the **Act respecting endangered or threatened species and amending the Act respecting the**

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[1] This obligation applies if the slope of the wooded strip is less than 40 % and if stocking exceeds 60 % in the merchantable stand.

Trees marked for harvesting must be evenly distributed throughout the wooded strip. Harvesting reduces the risk of uprooting and rejuvenates the stand by creating an opening which promotes the establishment of an understory. Diameter is measured at 1.3 meters above the highest ground level.

conservation and development of wildlife. The conditions which govern the use of these territories and their resources for purposes other than recreation are determined by the Government on the basis of the objectives for which they were established.

4.3.4 Recreation areas

Recreation areas are territorial units with facilities or infrastructures used for one or more intensive recreational activities.

Traditional logging methods may be inappropriate on land intended primarily for recreation, but certain forest management practices are required. Otherwise, the aging of the forest would eventually endanger recreational facilities and, possibly, the safety of users.

The forest operations to be performed may range from simple clearing of the underbrush to harvesting: the needs and particular features of each site will determine the operations required.

Care of the vegetation on and around these sites varies depending on the nature of the recreational activity in question and the extent to which it depends on the physical surroundings. The management standards must take into account the need to maintain the quality and special function of these sites.

The management standards for recreation areas requiring extensive facilities (downhill skiing centers, concentrated vacation sites, outdoor recreation centers, docks and boat ramps, public beaches, developed or semi-developed campsites, rest areas, picnic grounds, and observation areas) are designed to protect the **visual setting.** In some cases, with the agreement of the two departments concerned, the visual setting may be extended beyond the 1.5-kilometer limit. Within the visual setting, logging operations must be conducted according to a plan that respects the lay of the land and esthetic criteria.

For other types of facilities, the two departments may, in exceptional cases, assess the need to preserve a visual setting.

4.3.4.1 Concentrated trail networks (hiking, riding and skiing)

a) Definition:

The site of a concentrated trail network is a territory containing an average of 2.5 kilometers of trails per square kilometer of land; it includes a surounding strip of land 30 meters wide.

b) Management standards:

The only forest operations permitted are those which help to maintain the quality of the site and to preserve existing facilities and infrastructures.

Concentrated trail network

30 m
Site
Trails
Shelter

4.3.4.2 Interregional trails (hiking, riding and skiing) and outlying trails connected to concentrated trail networks

a) Definition:

The site comprises the trails used for hiking, riding or skiing, along with a 30-meter wooded strip on each side of the trails. These trails may connect two municipalities or regions. They may also be connected to, but not part of, a concentrated trail network.

The concept of immediate environment does not apply in this case.

b) Management standards:

On these sites, one-third of the trees 10 centimeters or more in diameter must be harvested[1]. Only sanitation cutting, selection thinning and individual selection cutting are permitted.

During harvesting, clearings made for logging machinery to cross the trail must be at least 500 meters apart. The trails must not be used for hauling, skidding or trucking. Any trees or parts of trees that fall on the trails must be removed. The trails must be restored to their original state once logging operations have been completed.

c) Special cases:

If a trail leads to an observation area, the appropriate management standards for this type of area and its immediate surroundings must be applied.

Protection of an interregional trail

30 m

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1 This obligation applies if the slope of the wooded strip is less than 40 % and if stocking exceeds 60 % in the merchantable stand.

Trees marked for harvesting must be evenly distributed throughout the wooded strip. Harvesting reduces the risk of uprooting and rejuvenates the stand by creating an opening which promotes the establishment of an understory. Diameter is measured at 1.3 meters above the highest ground level.

4.3.4.3 Developed canoe-camping and downriver canoeing courses

a) Definition:

These sites are watercourses or sections of watercourses that have been developed for canoeing. Portage trails are included in the site.

The immediate environment of these sites consists of a wooded strip 20 meters wide preserved on each side of the watercourse and portage trails.

Developed canoeing courses

Immediate surroundings
20 m
Site

b) Management standards:

These sites are unsuitable for forest operations.

One-third of the trees 10 centimeters or more in diameter must be harvested[1]

1 This obligation applies if the slope of the wooded strip is less than 40 % and if stocking exceeds 60 % in the merchantable stand.

Trees marked for harvesting must be evenly distributed throughout the wooded strip. Harvesting reduces the risk of uprooting and rejuvenates the stand by creating an opening which promotes the establishment of an understory. Diameter is measured at 1.3 meters above the highest ground level.

in the immediate surroundings. Heavy machinery may not be driven within the wooded strip.

4.3.4.4 Downhill skiing centers

a) Definition:

These sites comprise the space occupied by the ski center itself, the ski trails, the wooded areas separating the trails and the service areas.

The visual setting is the space seen from the top of the mountain up to a maximum of 1.5 kilometers.

Downhill ski center

Visual setting: maximum 1.5 km
(A) Services
(B) Trails
(C) Parking lot

b) Management standards:

These sites are unsuitable for forest operations.

All cuts are permitted within the visual setting, except commercial clear cutting.

4.3.4.5 Concentrated vacation sites

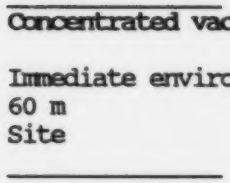
a) Definition:

These sites comprise vacation lots already identified on a map or at the actual site, and the unoccupied spaces between the lots. A site must be large enough to allow for the construction of at least five cottages, and there must be at least one lot per 0.8 hectares throughout the territorial unit.

The immediate environment consists of a wooded strip 60 meters wide preserved around the site. If the site is located along a body of water or in the mountains, a visual setting must also be delimited.

b) Management standards:

These sites are unsuitable for forest operations.



Concentrated vacation sites in the mountains or along a body of water

Maximum 1.5 km
Visual setting
60 m
Site

In the immediate environment, one-third of the trees 10 centimeters or more in diameter must be harvested[1]. Only sanitation cutting, selection thinning and individual selection cutting are permitted.

All cuts are permitted within the visual setting, except commercial clear cutting.

4.3.4.6 Outdoor recreation centers

a) Definition:

These sites comprise accommodation areas, facilities and service areas.

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1 This obligation applies if the slope of the wooded strip is less than 40 % and if stocking exceeds 60 % in the merchantable stand.

Trees marked for harvesting must be evenly distributed throughout the wooded strip. Harvesting reduces the risk of uprooting and rejuvenates the stand by creating an opening which promotes the establishment of an understory. Diameter is measured at 1.3 meters above the highest ground level.

The immediate environment of an outdoor recreation center consists of a wooded strip 60 meters wide preserved around the site. If the facilities are installed along a body of water, a visual setting must also be delimited.

Outdoor recreation center

Service areas
Visual setting
Maximum 1.5 km
60 m

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b) Management standards:

No forest operations are permitted on these sites.

In the 60-meter wooded strip which constitutes the immediate environment, one-third of the trees 10 centimeters or more in diameter must be harvested[1]. Only sanitation cutting, selection thinning and individual selection cutting are permitted.

All cuts are permitted within the visual setting, except commercial clear cutting.

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1 This obligation applies if the slope of the wooded strip is less than 40 % and if stocking exceeds 60 % in the merchantable stand.

Trees marked for harvesting must be evenly distributed throughout the wooded strip. Harvesting reduces the risk of uprooting and rejuvenates the stand by creating an opening which promotes the establishment of an understory. Diameter is measured at 1.3 meters above the highest ground level.

c) Special cases:

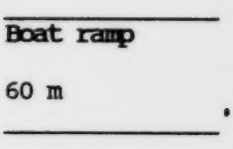
If related infrastructures (hiking trails, cross-country skiing trails, etc.) extend beyond the actual site, the appropriate management standards must be applied.

4.3.4.7 Docks and boat ramps

a) Definition:

These sites consist of the space occupied by infrastructures built to facilitate the docking and launching of boats used for recreation. They also include service areas (washrooms, shelters and parking lots).

The immediate environment consists of a wooded strip 60 meters wide preserved around the site.



b) Management standards:

These sites are unsuitable for forest operations.

In the immediate environment, one-third of the trees 10 centimeters or more in diameter must be harvested[1]. Only sanitation cutting, selection thinning and individual selection cutting are permitted.

c) Special cases:

If refreshment or accommodation facilities (cottages, hotels, campsites) are included in the site, a visual setting must also be delimited.

All cuts are permitted within the visual setting, except commercial clear cutting.

4.3.4.8 Public beaches

a) Definition:

These sites comprise the beach and the backshore, i.e., the space and facilities required for swimming and relaxation. The backshore extends up to 300 meters from the shoreline.

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1 This obligation applies if the slope of the wooded strip is less than 40 % and if stocking exceeds 60 % in the merchantable stand.

Trees marked for harvesting must be evenly distributed throughout the wooded strip. Harvesting reduces the risk of uprooting and rejuvenates the stand by creating an opening which promotes the establishment of an understory. Diameter is measured at 1.3 meters above the highest ground level.

The visual setting of public beaches is the land visible up to a maximum of 1.5 kilometers from the site.

Beach
Visual setting
Maximum 1.5 km
300 m or less
Beach (above and below waterline)
Backshore

b) Management standards:

Silvicultural operations are permitted only for the purpose of developing the site for recreation.

All cuts are permitted within the visual setting, except commercial clear cutting.

c) Special cases:

Camping areas and vacation facilities associated with the beach are considered to be part of the site.

In this case, the appropriate management standards must be applied.

4.3.4.9 Developed or semi-developed campsites

a) Definition:

These sites include the actual camping areas, service facilities (communal shelters, washrooms, parking lots, etc.) and game areas.

The **immediate environment** of a developed or semi-developed campsite consists of a wooded strip 60 meters wide preserved around the site. If the site is located along a body of water or in the mountains, a **visual setting** must also be delimited.

Developed or semi-developed campsite
Maximum: 1.5 km
60 m

b) Management standards:

No forest operations are permitted on these sites.

Within the 60-meter wooded strip that constitutes the immediate environment, one-third of the trees 10 centimeters or more in diameter must be harvested[1].

Only sanitation cutting, selection thinning and individual selection cutting are permitted.

All cuts are permitted within the visual setting, except commercial clear cutting.

4.3.4.10 Wilderness campsites along trails (hiking, riding, skiing, canoe-camping and downriver canoeing)

a) Definition:

These sites are equipped only with the bare necessities and offer neither running water nor electricity. They are usually designed for an outdoor activity (canoeing, hiking, etc.) and are not generally used for more than an overnight stay.

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1 This obligation applies if the slope of the wooded strip is less than 40 % and if stocking exceeds 60 % in the merchantable stand.

Trees marked for harvesting must be evenly distributed throughout the wooded strip. Harvesting reduces the risk of uprooting and rejuvenates the stand by creating an opening which promotes the establishment of an understory. Diameter is measured at 1.3 meters above the highest ground level.

The immediate environment consists of a wooded strip 60 meters wide preserved around the site.

Wilderness campsite

Logging
20 m
60 m
Campsite

b) Management standards:

No forest operations are permitted on these sites.

In the immediate environment of wilderness campsites, one-third of the trees 10 centimeters or more in diameter must be harvested[1]. Only sanitation cutting, selection thinning and individual selection cutting are permitted.

1 This obligation applies if the slope of the wooded strip is less than 40 % and if stocking exceeds 60 % in the merchantable stand.

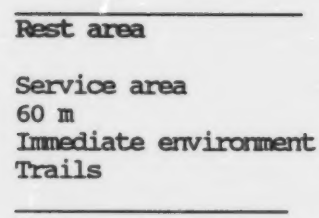
Trees marked for harvesting must be evenly distributed throughout the wooded strip. Harvesting reduces the risk of uprooting and rejuvenates the stand by creating an opening which promotes the establishment of an understory. Diameter is measured at 1.3 meters above the highest ground level.

4.3.4.11 Rest areas and picnic grounds

a) Definition:

These sites, designed to enable travellers to relax along the roadside, comprise the rest or picnic area and any related facilities (washrooms, shelters, parking lots, etc.).

The immediate environment consists of a wooded strip 60 meters wide preserved around the site.



b) Management standards:

No forest operations are permitted on these sites.

In the immediate environment of the site, one-third of the trees 10 centimeters or more in diameter must be harvested[1]. Only sanitation cutting, selection thinning and individual selection cutting are permitted.

c) Special cases:

If a site offers an especially beautiful view, a visual setting must also be delimited.

All cuts are permitted within the visual setting, except commercial clear cutting.

If walkways have been laid out on land adjacent to the site, this area is considered part of the immediate environment.

In this case, the immediate environment includes a wooded strip 30 meters wide preserved on each side of the walkway. Within this strip, one-third of

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1 This obligation applies if the slope of the wooded strip is less than 40 % and if stocking exceeds 60 % in the merchantable stand.

Trees marked for harvesting must be evenly distributed throughout the wooded strip. Harvesting reduces the risk of uprooting and rejuvenates the stand by creating an opening which promotes the establishment of an understory. Diameter is measured at 1.3 meters above the highest ground level.

the trees 10 centimeters or more in diameter must be harvested[1]. Only sanitation cutting, selection thinning and individual selection cutting are permitted.

4.3.4.12 Observation areas

a) Definition:

These sites are lookouts which are designed for the observation of nature and are recognized as observation areas in the Government's public land use plan.

The **immediate environment** consists of a wooded strip 60 meters wide adjacent to the site. The **visual setting** is the landscape visible up to a maximum of 1.5 kilometers from the site.

Scenic lookout

Visual setting
Maximum 1.5 km
60 m

1 This obligation applies if the slope of the wooded strip is less than 40 % and if stocking exceeds 60 % in the merchantable stand.

Trees marked for harvesting must be evenly distributed throughout the wooded strip. Harvesting reduces the risk of uprooting and rejuvenates the stand by creating an opening which promotes the establishment of an understory. Diameter is measured at 1.3 meters above the highest ground level.

b) Management standards:

No forest operations are permitted on these sites.

Within the 60-meter strip that constitutes the immediate environment of the site, one-third of the trees 10 centimeters or more in diameter must be harvested[1]. Only sanitation cutting, selection thinning and individual selection cutting are permitted.

On occasion, other forest operations may be conducted within the visual setting, but commercial clear cutting is prohibited.

c) Special cases:

Picnic areas or other recreational infrastuctures set up in proximity to the scenic lookout are considered as part of the site, along with any related facilities.

The appropriate management standards must be applied.

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1 This obligation applies if the slope of the wooded strip is less than 40 % and if stocking exceeds 60 % in the merchantable stand.

Trees marked for harvesting must be evenly distributed throughout the wooded strip. Harvesting reduces the risk of uprooting and rejuvenates the stand by creating an opening which promotes the establishment of an understory. Diameter is measured at 1.3 meters above the highest ground level.

If an observation area located along a scenic route identified by the Government offers a spectacular view, the visual setting comprises all the landscape visible from the site.

Only individual selection cutting, selection thinning, diameter-limit cutting and, in certain cases, patch cutting are permitted within the first 1.5 kilometers. All other silvicultural operations, except commercial clear cutting, are permitted between this 1.5-kilometer limit and the furthest limits of the landscape.

4.3.4.13 Climbing areas

a) Definition:

These are sites whose topography makes them suitable for climbing.

The concept of immediate environment does not apply in this case.

b) Management standards:

These sites are unsuitable for forest operations.

4.3.4.14 Other outdoor recreation areas

a) Definition:

These sites include all areas with facilities and infrastructures for outdoor recreational activities not listed above.

The immediate environment and visual setting of these sites depend on the type of facilities and infrastructures located there.

b) Management standards:

All silvicultural operations are permitted, if they are intended to maintain the function of the site, its immediate surroundings and the visual setting, if any.

4.3.5 Habitats of endangered or threatened plant species

a) Definition:

These sites are established under the Act respecting endangered or threatened species and amending the Act respecting the conservation and development of wildlife and are designated by the ministère de l'Environnement to protect certain plant species. They are establihed following:

1. administrative agreements between the departments responsible for species which may be deemed endangered or threatened;

2. a decision by the Government to designate plant species as endangered or threatened.

b) Management standards:

No forest operations are permitted on these sites.

A wooded strip 60 meters wide must be left intact around all habitats of endangered or threatened plant species to ensure their protection. One-third of the trees 10 centimeters or more in diameter must be harvested within the wooded strip[1]. Sanitation cutting, selection thinning or individual selection cutting must be used.

4.3.6 Areas zoned for agriculture

These sites consist of public lands zoned for agriculture in accordance with the Act to preserve agricultural land.

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[1] This obligation applies if the slope of the wooded strip is less than 40 % and if stocking exceeds 60 % in the merchantable stand.

Trees marked for harvesting must be evenly distributed throughout the wooded strip. Harvesting reduces the risk of uprooting and rejuvenates the stand by creating an opening which promotes the establishment of an understory. Diameter is measured at 1.3 meters above the highest ground level.

This act defines agriculture as the "cultivation of the soils and plants, leaving land uncropped or using it for forestry purposes, or the raising of livestock, and, for these purposes, the making, construction or utilization of works, structures or buildings, except residences."

Lots in an agricultural zone may not be used for purposes other than agriculture without the authorization of the Commission de protection du territoire agricole (CPTA). Sugar bushes may not be used for purposes other than maple syrup production, and maple trees in a sugar bush may not be felled unless selection cutting or thinning is necessary for the preservation of the bush.

Sugar bush logging operations and reforestation programs must be authorized respectively by the Commission de protection du territoire agricole and the ministère de l'Agriculture, des Pêcheries et de l'Alimentation du Québec.

CHAPTER 5

ECOLOGICAL RESERVES, PROVINCIAL PARKS AND CATEGORY I LANDS DEFINED UNDER THE JAMES BAY AND NORTHERN QUÉBEC AGREEMENT

5.1 Introduction

These territorial units are governed by the **Act respecting ecological reserves**, administered by the ministère de l'Environnement; the **Parks Act**, administered by the ministère du Loisir, de la Chasse et de la Pêche; and the **Act respecting the land regime in the James Bay and New Québec territories**, which transfers Category IA lands to the Government of Canada and Category IB lands to Cree landholding corporations for the exclusive use and benefit of local governments.

5.2 Ecological reserves

The use assigned to these territorial units is based on three major objectives:

a) to ensure the protection of representative or unique samples of our natural heritage;

b) to reserve land exclusively for scientific research or education;

c) to ensure the preservation of animal or plant species threatened with extinction.

The **Act respecting ecological reserves** prohibits the following activities on these lands: hunting and fishing; forest, agricultural and mining operations; digs and exploration activities; prospecting, terracing and construction. Any operation which might alter the appearance of the land or vegetation or disturb plant and animal species, is also prohibited. No new animal or plant species may be introduced into an ecological reserve.

A wooded strip 60 meters wide must be preserved around all ecological reserves to ensure their protection. One-third of the trees 10 centimeters or more in diameter must be harvested within the wooded strips[1]. Only sanitation cutting, selection thinning and diameter-limit cutting are permitted.

5.3 Provincial parks

The use assigned to these territorial units is based on three major objectives:

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1 This obligation applies if the slope of the wooded strip is less than 40 % and if stocking exceeds 60 % in the merchantable stand.

Trees marked for harvesting must be evenly distributed throughout the wooded strip. Harvesting reduces the risk of uprooting and rejuvenates the stand by creating an opening which promotes the establishment of an understory. Diameter is measured at 1.3 meters above the highest ground level.

a) to ensure the preservation and enhancement of representative or outstanding features of Québec's natural heritage;

b) to help meet the public's demand for outdoor recreational facilities;

c) to involve Québecers in the development and enhancement of their parks.

The **Parks Act** also prohibits all hunting and prospecting activities as well as the use or development of forest, mineral or energy resources. It is also forbidden to install oil or gas pipelines or power transmission lines within the boundaries of a park.

The ministère du Loisir, de la Chasse et de la Pêche, which is responsible for administering the **Parks Act**, may authorize or conduct any maintenance, development or construction work required to maintain or improve the quality of a park.

5.4 Category I lands defined under the James Bay and Northern Québec Agreement

The **Act respecting the land regime in the James Bay and Northern Québec territories** stipulates, among other things, that:

- the administration, management and control of Category IA lands are transferred to the Government of Canada for the exclusive use and benefit of local governments;

- the ownership of Category IB lands is transferred by letters patent to the Cree landholding corporations established under section 2 of the Act;

- the Cree beneficiaries are entitled to use the forests on Category I lands for their personal and collective needs (section 57);

- the local governments have the exclusive right to carry out commercial logging operations on Category I lands, in accordance with a development and marketing plan approved by the ministère de l'Énergie et des Ressources.

APPENDIX 1

Regulatory distance between diagonal ditches, according to soil type

(Rothwell, 1971)

Slope (in degrees)	Distance (in m)		
	Soils subject to erosion		
	Clay, silt	Fine sand	Sand, gravel
4°	50	65	-
6° to 10°	35	50	65
10° or more	15	35	50

APPENDIX 2

Calculating culvert diameters

Maximum flow

The first step in determining the diameter of a culvert is to obtain a rough estimate of the maximum flow of the watercourse. As an aid to readers, we have established the relationship between maximum flow levels, which occur on average once every 20 years, and the area of the watershed upstream from the site.

Culvert dimensions

The diameter of a culvert must be such that the water will not fill the culvert beyond 75% of its capacity. A graph at the end of this appendix indicates culvert diameters according to maximum flow rates and watershed areas. This graph is valid when:

. the maximum flow occurs every 20 years;
. the incline of the culvert is 2%;
. the flow rate at flood level is 3 meters per second;
. the lower end of the culvert is not entirely submerged.

To prevent obstruction of the culvert by debris, an opening at least 45 centimeters in diameter is recommended. If the incline of the culvert is less than 2%, the diameter must be increased.

The figures provided in the graph are examples and must be adjusted to each region and watershed (see map of watersheds).

Map of watersheds in Québec

Using the graph

Example: A culvert must be installed on a watercourse draining a watershed of 10 square kilometers in Region 4. The point corresponding to 10 square kilometers must first be located on the horizontal axis. The line perpendicular to this axis must then be followed up to its intersection with the curve for Region 4.

From the point of intersection, the horizontal line must be followed to the left, where the maximum flow of the watercourse is indicated, i.e., 14 cubic meters per second.

The same horizontal line, followed to the right from the point of intersection, indicates the size of the culvert required:

a) rectangular wood culvert - opening of 5 square meters

b) round metal culvert - 2.1 meters in diameter

Relationship between flow rate, watershed area and culvert diameter, for various hydrographic regions

Regions 4, 6 and 8

Regions 5, 7 and 9

Regions 1, 3 and 2 south

Region 2 north

Maximum flow (m^3/sec)

Watershed area (km^2)

Minimum area, rectangular wood culvert (m^2)

Minimum diameter, round metal culvert (cm)

APPENDIX 3

G L O S S A R Y

Commercial clearcutting (coupe à blanc)

The felling or harvesting of all trees of commercial species in a stand (see Appendix 5) which have attained the diameters specified on the management permit. Commercial clear-cutting removes more than 75% of the stand basal area or reduces the density of the forest cover to less than 25%.

Strip cutting (coupe à blanc par bandes)

Commercial clear cutting in strips not wider than 60 meters. The distance between the strips must at least equal their width.

Patch cutting (coupe à blanc par trouées)

Commercial clear cutting on an area of less than 30 hectares. Each patch must have an irregular shape.

Selection cutting (coupe de jardinage)

Periodic felling or harvesting of individual trees or small groups of trees in an uneven-aged high forest. The objective is to create a balanced structure in the stand or to maintain the existing balance, taking all the stem diameters into account.

Selection thinning (coupe d'éclaircie jardinatoire)

The felling or harvesting of the commercial species in a stand which has not yet reached maturity. The objective is to accelerate diameter increment in the remaining trees and to improve their shape.

Shelterwood cutting (coupe progressive d'ensemencement)

The felling or harvesting of trees during the first of the successive regeneration cuts carried out in a stand mature enough to be harvested. This cut opens up the forest canopy and eliminates dominated trees. It also promotes natural regeneration since dominant seed trees are preserved.

Diameter-limit cutting (coupe à diamètre limite)

The felling or harvesting of trees whose diameter, measured 30 cm above the highest ground, is at least equal to that specified on the management permit.

Sanitation cutting (coupe d'assainissement)

The felling or harvesting of deficient, blighted, deteriorated, damaged or dead trees to prevent the spread of insects or disease within a stand. Felled trees must be used, destroyed or removed from the site.

Seed-tree cutting (coupe avec réserve de semenciers)

Harvesting that spares some marketable individuals of a given species. The objective is to encourage natural seeding.

Advance growth protection cutting (coupe avec protection de la régénération)

Felling or harvesting which preserves the new growth of desirable species in a stand.

Breeding arboretum (arboretum)

A plantation whose main objective is to produce a collection of trees which will be used as parents in genetic experiments.

Winter road (chemin d'hiver)

Road built during the winter and requiring no ground preparation. Winter roads may not be used unless the ground is frozen to a depth of at least 35 centimeters.

Watercourse (cours d'eau)

Generic term referring to rivers, streams, etc.

Intermittent watercourse (cours d'eau intermittent)

These are watercourses whose beds periodically dry up. They are identified on the forest maps published by the Service de l'inventaire forestier of the ministère de l'Énergie et des Ressources.

Drainage (drainage)

Operations (ditch excavation, creation of settling ponds, etc.) intended to reduce ground moisture by diverting surface and infiltration water. Drainage encourages tree development and the establishment of new growth. It also

makes it possible to maintain the productivity of a site after tree harvesting.

Dwelling (habitation)

Any building intended as a lodging for human beings and equipped with drinking water and drainage systems.

Watercourse bed (lit d'un cours d'eau)

Natural depression in the ground where a perennial or ephemeral watercourse flows. The bed is free of vegetation.

Seed stand (peuplement semencier)

A finely developed stand whose quality is heightened through the periodic felling of undesirable trees. Silvicultural work is carried out to foster rapid and abundant seed production.

Seed orchard (verger à graines)

Plantation of clones or seedlings taken from selected trees. Seed orchards are isolated to prevent pollinization by inferior individuals and are equiped for the production of improved seed to be used in reforestation programs. Testing makes it possible to identify genetically inferior trees, which are felled.

APPENDIX 4

NUMBER OF WILDLIFE AREAS MAPPED PER CATEGORY OF HABITAT PUBLIC AND PRIVATE LANDS (as of March 15, 1989)

REGION / CATEGORY	01	02	03	04	05	06	07	08	09	10	TOTAL	AREA OR DISTANCE
Waterfowl habitats	79	22	33	31	-	66	65	51	39	1	387	2 542 km
Heronries	21	10	5	5	10	22	115	20	3	1	212	218 km^2
Bird colonies	51	6	5	9	-	6	15	9	59	-	160	N.D.
Deer Yards	223	5	26	8	229	115	168	4	7	-	785	5 275 km^2
Caribou habitats	1	0	1	-	-	-	-	1	-	2	5	27 000 km^2
Salt licks	22	-	-	-	-	-	-	-	-	-	22	N.D.
TOTAL	**397**	**43**	**70**	**53**	**239**	**209**	**363**	**85**	**108**	**4**	**1 571**	

* Except white-tailed deer yards on Anticosti Island.

SOURCE: Ministère du Loisir, de la Chasse et de la Pêche

APPENDIX 5

COMMERCIAL SPECIES

Softwoods	Hardwoods
White spruce	White birch
Black spruce	Balsam poplar
Red spruce	Big-toothed aspen
Norway spruce	Trembling aspen
Tamarack	Other poplars
Jack pine	Swamp white oak
Canadian hemlock	White oak
Balsam fir	Red oak
White cedar	Burr oak
White pine	Yellow birch
Red pine	Black cherry
	Silver maple
	Sugar maple
	Red maple
	Ash
	American beech
	Walnut
	Hickory
	American elm
	Slippery elm
	Ironwood
	Basswood

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